

Chapter 5

Preferred Alternatives

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In this section of the FPEIS, NMFS presents the Preferred Agency Alternative and the Environmentally Preferable Alternative. As required by NEPA and the CEQ implementing NEPA regulations, NMFS must identify both an Environmentally Preferable Alternative and a Preferred Agency Alternative. The

Environmentally Preferable Alternative “ordinarily means the alternative that causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves, and enhances historic, cultural, and natural resources” (Council on Environmental Quality [CEQ], 1981: Forty Most Asked Questions, No. 6(a)). The Environmentally Preferable Alternative can be the same as the Preferred Agency Alternative or may differ in some respects, depending on the analysis in the EIS.

The Preferred Agency Alternative is the alternative that NMFS and its cooperating agency, ADF&G, believe best fulfills the purpose and need of the proposed actions. As provided for in NEPA and the CEQ NEPA implementing regulations, the Preferred Agency Alternative and the Environmentally Preferable Alternative need not be the same. NMFS may consider other issues in choosing its Preferred Agency Alternative. This includes factors such as the agency’s statutory mission and responsibilities and economic, environmental, technical, and social factors.

This FPEIS considered three programmatic alternatives for each of the management jurisdictions. Alternative 1- No Action (Status Quo) generally characterizes management practices consistent with recent ESA requirements that were contained in recent consultations. Alternative 2 – Reduce Chinook Nonretention (CNR) Fisheries considers management strategies that are generally designed to reduce impacts to natural-origin fish through a variety of selective harvest methods, while maintaining or enhancing the fishery. Alternative 3- No Incidental Take defines the end point of a continuum of potential, increasingly restrictive, management practices. For Alternative 3- No Incidental Take, NMFS assumed that fisheries would be managed subject to the requirement that listed fish not be caught. Alternatives 1 and 3, therefore, cover the range of possible effects on the biological and human environment for the alternatives considered. The differences between Alternatives 1 and 3 are discussed in more detail in Chapter 1.

The FPEIS does not review stock-specific conservation objectives that are set by the responsible managers through region-specific processes. This FPEIS assumes that these goals will continue to be reviewed and adjusted as necessary. The FPEIS explores approaches for reducing impacts to listed species, or other stocks of concern, while maintaining or increasing harvest on targeted salmon stocks. As discussed in Chapter 1, the analysis assumes that all of the alternatives will be managed consistent with the ESA requirements.

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Alternative 3- No Incidental Take assumes that the fisheries in each jurisdiction will be managed to avoid listed fish. This alternative would result in increased escapement for all listed stocks and would be the Environmentally Preferable Alternative. Fish that would not be caught under Alternative 3 would be redistributed, some would die as a result of natural mortality, and some would be caught in subsequent fisheries that would remain open. Examples where catch may occur include Canada or certain extreme terminal areas where listed fish do not occur. Others would be lost as a result of different sources of human-induced mortality such as upstream passage through hydro projects. The remainder would accrue to escapement. The relative increase in escapement would depend primarily on the level of harvest that occurred under Alternative 1- No Action (Status Quo). For some stocks that are still subject to relatively high harvest rates, the effect on escapement might be considerable. The analysis for Snake River fall chinook shown in Table 4.5-4 provides a simple example of the potential effects on escapement under Alternatives 2 and 3. For other stocks that are currently managed to allow relatively little harvest, the change in escapement would be small. Lower Columbia River steelhead or Snake River or Upper Columbia River spring chinook stocks that are currently subject to single digit harvest rates provide an example.

Although Alternative 3- No Incidental Take would result in increased escapement, it is not considered necessary for reasons of conservation. An underlying premise of all the alternatives is that they must be consistent with ESA-related limitations. While requiring no fishing is obviously more conservative, it is not essential to protect listed fish. Management objectives and harvest limitations for non-listed stocks are subject to additional conservation-related mandates that are set by the responsible jurisdictions and are responsive to directives such as the PST and the MSA.

Alternative 3- No Incidental Take would result in significant impacts on the human environment. It would virtually eliminate all mixed stock salmon fisheries in Southeast Alaska, along the Pacific Coast, and in the Columbia River, resulting in dislocation of the entire industry. Some of the fisheries along the Pacific Coast and in the Columbia River provide Tribal harvest opportunities that are protected by related treaties with the federal government. Alternative 3 would eliminate these treaty fisheries that, by case law, are subject to involuntary restriction only if circumstances meet specific criteria related to conservation necessity. Alternative 3, unless necessary for conservation, would be inconsistent with treaty right obligations and the federal government's trust responsibility. Other legal mandates and policies related to MSA, and which apply to the ocean fisheries, require that fisheries be managed to achieve optimum yield on a continuing basis. Alternative 3 would be inconsistent with this directive as well.

Although Alternative 3- No Incidental Take would be the Environmentally Preferable Alternative because it would result in increased escapement for natural fish stocks, NMFS did not choose it as the Preferred Agency Alternative for the reasons described above. After eliminating Alternative 3, NMFS could select a Preferred Agency Alternative for each jurisdiction from either Alternative 1 – No Action (Status Quo) or Alternative 2- Reduce Chinook Nonretention. NMFS considered the above statutory missions as well as its responsibilities under MSA, in choosing the Preferred Agency Alternative. The following discussion addresses these choices.

5.1 Southeast Alaska

In Alaska, Alternative 1- No Action (Status Quo) would presume continued implementation of the PST between the United States and Canada. The PST establishes procedures for annual determination of the overall chinook catch quota, which varies with the estimated abundance of chinook available to the Southeast Alaska commercial troll fishery. Alternative 1 also incorporates

existing rules, established by the Alaska Board of Fisheries, for allocating the catch among troll, net, and sport fisheries and specific, season-related management provisions.

Generally, Alternative 2- Reduce Chinook Nonretention Fisheries would focus on selective fishery techniques designed to reduce the effects on listed stocks or other wild stocks of concern. In Alaska, the opportunities for harvest reform in this context are more limited. Selective fisheries that target mark hatchery fish are not viable because of the relatively low contribution of hatchery fish to the region. Many of the alternative live capture gear types would also be impractical in these open-ocean, mixed-stock fisheries. These options are discussed briefly in Section 2.3.2, which deals with alternatives considered, but they were excluded from further analysis.

Alternative 2 would focus on the objective of eliminating Southeast Alaska CNR fisheries that occur during the summer season when coho are targeted, but would require the release of chinook. The objective of Alternative 2 is to modify the fishery to eliminate the need for CNR fishing periods and the associated hooking mortality. Alternative 2 would not define the actions necessary to eliminate the CNR fishery, but NMFS presumed that its selection would require changing the current fishery structure to slow the catch of chinook enough to eliminate the need for CNR fishing. NMFS assumes that this would be accomplished by delaying the start of the July fishery and/or closing areas of high chinook abundance, although it would be up to the state of Alaska to figure out how to implement this most efficiently.

The analysis of Alternative 2 indicates that the conservation benefit would be relatively small. For analytical purposes, NMFS assumed that the CNR mortality of legal-sized chinook would range from 8,000 to 20,000 fish under Alternative 1. However, the PST contains an incentive to encourage actions that reduce CNR mortality by providing that half the savings be added to the total allowable catch. The actual mortality reduction would, therefore, range from approximately 4,000 to 10,000 fish under Alternative 2 (compared to catch ceilings that range from 160,000 [Baseline 2] to 292,000 [Baseline 1]). The overall mortality for the fishery would be reduced by 1.8 to 2.6 percent, again depending on the baseline considered. As an example, the exploitation rate of Upper Willamette spring chinook would be reduced from 5.3 to 5.2 percent for Baseline 1 (1988 to 1993) under Alternative 2 (Table 4.2-1).

Delaying the start of the summer season fishery would result in some lost opportunity to catch coho, and the length of the delay needed is uncertain. The analysis assumed that the coho catch would be reduced by at least 5 percent and as much as 15 percent each year as a result of implementing Alternative 2.

A further effect of Alternative 2 would be disruption of the inseason, run-size update. The initial preseason abundance forecast is currently updated inseason to refine the preseason forecast. If the abundance estimate changes, the target catch level is adjusted accordingly. The update relies on the time series of catch and effort data based on the existing management structure. If the start date of the fishery were changed, or the high abundance areas were closed during the initial opening, the relationship between catch rate and abundance would change. The inseason update would, thus, be compromised, at least until enough information became available to make the necessary correction. During the interim, management would be less precise.

Currently, the PST defines catch quotas for chinook in the Southeast Alaska fishery that vary depending on the estimated abundance of fish in a particular year. However, the PST also has set an objective of moving from quotas on landed catch to limits based on total fishing mortality as soon as technically feasible. Included in this are specific incentives designed to encourage

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management actions that will reduce incidental mortalities such as those that occur during the CNR fishing periods. Although Alternative 2 would require more specific and immediate steps to eliminate CNR fishing, that general objective is already included as part of Alternative 1- No Action (Status Quo).

For the above reasons, NMFS selected Alternative 1- No Action (Status Quo) as the Preferred Agency Alternative for the Southeast Alaska fishery.

5.2 Pacific Coast

Alternative 1- No Action (Status Quo) for the PFMC fisheries represents the approach currently being used by the PFMC as it develops its annual fishery management plans. The PFMC's framework FMP establishes conservation objectives for the chinook and coho stocks affected by its fisheries. These conservation objectives are reviewed periodically, but are otherwise fixed and define the biological limits around which fisheries are annually managed. The annual plans consist of a suite of management measures that are configured to meet these objectives in each fishery management area. The available management tools include quota restrictions, time and area closures, gear restrictions, and sometimes species nonretention requirements, as in a chinook nonretention fishery. This FPEIS considers additional strategies to manage the fishery to meet the conservation objectives.

Alternative 1- No Action (Status Quo) presumes continued reliance on the more traditional management measures outlined above. The current management system does not preclude the use of mark-selective fisheries. In fact, the PFMC has begun to implement mark-selective fisheries for coho in recent years. Mass mark-selective fisheries are considered separately under Alternative 2 to allow a more focused analysis of this management strategy.

Two sub-options are contained within Alternative 2- Mark-Selective Fisheries. In theory, mark-selective retention fisheries can reduce impacts on the natural origin fish that are released from impacts that would occur during a similar, but non-selective, fishery. These mortality savings can be used in one of two ways. The mortality savings associated with selective fisheries can be used to allow more harvest on targeted stocks without increasing impacts to listed fish. The level of fishing opportunity can also be fixed, with the benefits of selective harvest accruing to escapement.

Alternative 2, Option A, was modeled to maximize season duration within each fishery management area, while meeting or exceeding the stock-specific conservation objectives.

Alternative 2, Option B, was modeled to maximize escapement of natural stocks, while assuming the season duration would be similar to that under Alternative 1.

Alternative 2 for the PFMC considers only selective fishery options related to the use of hook-and-line gear. As was the case in the Southeast Alaska fishery, other gear types that might allow catch and release were considered, but proved impractical in an open-ocean-fishery setting. A discussion of these alternative gear types is included in Section 2.3.2.

The analysis relative to Alternative 2 assumed that all hatchery chinook and coho produced in southern U.S. facilities would be marked and targeted in selective hook-and-line fisheries in PFMC management areas. The analysis, therefore, considered effects on the biological and human environments, assuming that selective fisheries could be fully implemented. As discussed in Section 4.3.3.3, however, significant questions remain about whether mark-selective fisheries, particularly for chinook, could be broadly implemented without compromising the CWT system that would provide the basis for stock specific management. Selective fisheries such as those

considered under Alternative 2 should not be implemented unless they would not significantly compromise the existing management system. Current information suggests that selective fisheries may be more feasible for coho than for chinook. Selective fisheries for chinook are more likely to be feasible if implemented on a limited scale, in terminal areas for example. But it will likely still be a few years before enough data exist to define the practical limits of selective fishery implementation. This FPEIS takes this into account. Alternative 2 does not consider whether selective fisheries should be fully implemented. Instead, it considers the potential costs and benefits of implementing selective harvest methods, but presumes that selective fisheries would or would not be implemented, depending on considerations particular to each fishery.

Generally the predicted effects on catch and natural escapement were consistent with the results of the Alternative 2 analysis. Under Alternative 2, Option A, selective fisheries would be implemented, and effort would increase relative to Alternative 1 until the applicable conservation constraint was met. In most areas, the result would be increased catch. For example, the catch of chinook in the area north of Falcon during Baseline 1 would increase from more than 13,000 to almost 68,000 (Table 4.3-3). Under Alternative 2, Option B, effort would be held constant relative to Alternative 1 to allow greater escapement. Because unmarked fish were released with no increase in effort, the landed catch of chinook would decrease from about 13,000 to less than 10,000 (Table 4.3-3).

The catch of natural or listed fish would vary, again depending on the baseline, Alternative 2, and the area. It would also depend on which stock was assumed to constrain a particular fishery. Impacts to natural coho north of Falcon during Baseline 1 would decline by 27 percent under Alternative 2, Option A, and by 82 percent under Alternative 2, Option B. Most of the savings of natural fish from harvest reductions would accrue to escapement.

These results suggest that selective fisheries could have significant benefits in terms of higher catches of target species and lower mortality to natural fish. However, the magnitude of the benefits would be specific to the circumstances in a given area and year. There would likely be cases where implementation of selective fisheries would be counter-productive. As the relative abundance of marked hatchery fish declines and the rate of hook-and-release mortality for a particular gear increases, the benefits of selective fisheries are reduced. Similarly, if a selective fishery significantly affects the quality of the CWT database, the short-term benefits to the fishery or to natural escapement cannot be justified.

Based on the results of the analysis, and considering NMFS' statutory mission and responsibilities under MSA and ESA, the agency identified Alternative 2, Option A, as the Preferred Agency Alternative for the Pacific Coast fishery, but with the caveat that the benefits to the fishery and to natural escapement would have to be evaluated against the cost on a case-by-case basis.

5.3 Columbia River

Alternative 1- No Action (Status Quo) and Alternative 2- Live Capture, Selective, and Terminal Fisheries for the Columbia River are similar to those for the Pacific Coast fishery. Alternative 1 would rely on existing management tools to achieve a set of stock-specific conservation objectives. Alternative 2 assumes that mark-selective fisheries for chinook, coho, and steelhead would be fully implemented. It also assumes that terminal fisheries would be used to target surpluses, where possible. As was the case for the PPMC fisheries, Alternative 2 considers two options. Under Alternative 2 Option A, selective fisheries would be implemented in mixed stock areas; the

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selective fisheries would be coupled with the terminal area fisheries that would seek to use the available surplus in areas where the impact to listed fish would be exceptionally low. Alternative 2, Option B, is more restrictive and would consider only the use of selective fisheries in mixed stock areas.

Under Alternative 1, fisheries would be managed using quotas, seasons, and area and gear restrictions to maximize harvest opportunity within the specified conservation limits. In non-Indian commercial fisheries, all steelhead must be released, and in recreational fisheries, all unmarked steelhead must be released. In these respects, non-Indian fisheries are already managed by using selective management tools that would be applied more broadly in Alternative 2. These measures are included as part of Alternative 1 because they have been the common practice for the last 10 or 15 years.

Three changes were considered for Alternative 2. First, it was assumed that all hatchery-produced chinook and coho would be externally marked. All hatchery steelhead are already marked. Second, it was assumed that fisheries would be managed primarily to harvest marked hatchery fish selectively, rather than relying only on quotas or time/area closures to limit impacts to natural stocks. Finally, it was assumed that there would be a shift to gear types allowing live-capture and release of unmarked fish and non-target species. More extensive use of terminal fisheries was also considered as part of Alternative 2. Although there is some general discussion about gear types that might be used including tangle nets, hoop nets, dip nets, fish traps, weirs, etc., the FPEIS does not attempt to analyze the feasibility or relative merits of particular gears. Instead, it was assumed that gears could be developed and deployed under various circumstances that would have catch-and-release mortalities of 10 percent or less. Some gear types that meet the criteria are already available, including hook-and-line, dip-net, and possibly tangle nets. Further development of other gears would also be needed to meet fishery specific needs. This FPEIS considers the general merits of implementing live-capture, selective fisheries.

As discussed above, outstanding questions remain relative to the feasibility of implementing mark-selective fisheries and the potential for adverse effects on the CWT database, particularly for chinook. Mark-selective fisheries for steelhead have been used in the non-Indian fisheries for years. Because steelhead are not caught in ocean fisheries and do not depend on the use of CWTs for management, expanding the use of mark-selective fisheries for steelhead would likely not be problematic, at least with respect to stock assessment methods. While some questions remain regarding mark-selective fisheries for coho, they are more easily resolved. Selective fisheries for coho have already been implemented on a broad scale in the ocean and lower river fisheries over the last 2 or 3 years. Although additional data are needed, technical problems related to mark selective fisheries for coho can probably be resolved. Implementation of mark-selective fisheries for chinook will be more problematic and will have to be assessed on a case-by-case basis. The analysis in this FPEIS assumed that selective fisheries could be fully implemented in order to analyze the potential benefits, while recognizing associated concerns.

The total catch of salmon and steelhead would be higher under Alternative 2, Option A. The total predicted catch under Baselines 1 and 2 would be 895,000 and 358,000, respectively, compared to 798,000 and 259,000 under Alternative 1. The distribution of catch among species would not change substantially compared to Alternative 1. Under Baseline 1, coho would comprise 45 percent of the catch, followed by chinook (30 percent). Under Baseline 2, steelhead would comprise 45 percent of the harvest, followed by chinook (34 percent) and coho (21 percent) (Tables 4.4-2 and 4.4.3).

Under Alternative 2, Option B, the total expected catch under Baselines 1 and 2 would be 661,000 and 219,000, respectively, compared to 798,000 and 259,000 under Alternative 1. Harvests of all stocks would decrease in approximate proportion to the percentage of unmarked fish released. The harvest of coho would have the smallest proportionate decrease (10 percent) because of their predominantly hatchery origin. Harvest of upriver fall chinook and lower river chinook would decrease 62 and 28 percent, respectively. Upriver steelhead harvest would decrease approximately 8 percent, and lower river steelhead harvest would remain the same (Tables 4.4-2 and 4.4-3).

Escapement goals for most weak stocks would still not be met under Alternative 3- No Incidental Take. Production hatcheries would likely close in order to reduce straying to the spawning grounds, and incentives to monitor the population status of wild stocks would likely diminish.

Under Alternative 1, effects on the human environment would be similar to existing conditions.

Alternative 2 would likely have significant economic, cultural, and social impacts, including the following:

- Gear types and fishing techniques used by commercial Indian and non-Indian fishers and some Tribal ceremonial and subsistence (C&S) fishers would change, necessitating a transition period to determine which gear types would be best suited to particular circumstances.
- Expanded use of terminal fishing areas would be necessary to access some harvestable stocks. Since Tribes' usual and accustomed fishing areas are limited geographically, some Tribes might lose access to stocks returning to terminal areas outside their usual and customary fishing areas.
- New fishing methods could increase or decrease effort or numbers of fishers needed to achieve a harvest similar to that under Alternative 1.
- Wild salmon and steelhead would have to be released. Some Tribal and sport fishers especially prize wild salmon and steelhead. Tribal fishers consider the right to harvest wild salmon and steelhead to be guaranteed by treaty and an essential part of their cultural heritage.
- Salmon and steelhead harvested in some terminal areas (as under Alternative 2) may command a lower market price than those harvested earlier in their spawning migration.

Baseline 1, a mark-selective fishing alternative that does not allow for additional exploitation of hatchery fish and healthy wild fish runs, would have the greatest impact on Indian commercial fishers (44 percent decline), followed by Indian C&S fishers in Zone 6 (43 percent decline in harvests), non-Indian commercial fishers (18 percent decline), Indian C&S fishers in tributaries (14 percent decline), and recreational fishers (7 percent decline). The percentage of lost harvests under Baseline 2 would be slightly lower than that under Baseline 1, except that lost harvests by commercial Indian fishers would significantly increase to 51 percent because they could not retain upriver fall chinook.

Alternative 3 would have significant adverse economic, social, and cultural effects on Tribal and sport fishers and the businesses that depend on them. Alternative 3 would impact the trust relationships between Indian Nations and the federal government.

These results suggest that greater reliance on management practices considered in Alternative 2 could have significant benefits in terms of higher catches of target species and/or lower mortality to natural fish. However, the magnitude of the benefits would be specific to the circumstances in a

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given area and year. There would probably be cases where implementation of selective fisheries would be counter-productive. As the relative abundance of marked hatchery fish declines and the rate of hook-and-release mortality for a particular gear increases, the benefits of selective fisheries are reduced. Similarly, if a selective fishery significantly affects the quality of the CWT database, the short-term benefits to the fishery or to natural escapement can not be justified.

Based on the results of the analysis, and considering NMFS' statutory mission and responsibilities, the agency identified Alternative 2, Option A, as the Preferred Agency Alternative for the Columbia River fishery, but with the caveat that the benefits to the fishery and natural escapement would have to be evaluated against associated costs on a case-by-case basis.